(1) Convert to m

(a) 4.25 cm .0425 m
(b) 4.25 km 4250 m
(c) 4.25 mm .00425 m
(d) .425 km 425 m
(e) 4.25 m 4.25 m

(2) Convert to mm:

(a) 52.3 cm 523 mm
(b) 5.23 cm 52.3 mm
(c) .423 m 423 mm
(d) .042 cm .42 mm
(e) 10.008 m 10008 mm

(3) Convert to km

(a) 7.259 m .00 7259 km
(b) 725 m .725 km
(c) 5.258 m .005 258 km
(d) 5000000 cm 50 km
(e) 5275 cm .05275 km

(4) A box is 3.2 x 4 x 2.1 cm. area base = 12.8 cm² vol = 26.88 cm³

(5) circle r = 15 m area = 225π m²

(6) Ten coins drop. From 5 mL to 25 mL, coin vol = 2.4 mL/10

(7) cylinder r = 5 m h = 4 m vol 50π m³

(8) sphere r = 3 12π cm³

(9) How many m² in: (a) 1 km² 10^6 m² (b) 20000 cm² 2×10^{-4} m²

(10) (a) 2 km³ 8×10^9 m³ (b) 50 million cm³

(11) circle, 10 = dia from sq. square 10 side. left over area = 100 − 78.5 = 21.5

(12) cube box 10 x 10 x 10 cm filled w/ water. 5.4 cm wide iron. Iron vol = 90 cm³

(13) coin r = 1 cm thick = 1.5 mm. vol = .471 cm³ 3.14 x .15 = .4710 cm³

(14) How does amt. steel for 8mm radius ball compare to 2mm radius. is 8 times

$\frac{x}{.471} = 19.6$

$x = 9.2316$

19.6 × .471 = 196 + 14720 + 78400 = 92316

2.8 × 2.4 = 112 + 56 = 168 × 16 = 2688

① .54 kg 5.4 kg

② 242g, 465g, ~~2000~~ .023g

③ 3KG

④ 7.5 cm

⑤ 40 m^3: $m = \left(\frac{1000\,kg}{m^3}\right)(40\,m^3) = 40000kg$

⑥ 13.5 $\frac{x}{11.5} = 8.9$ $x = 120.15$ g or 120.2g

⑦ 1.39 g/cm^3

⑧ ~~54 kg~~ 135

⑨ ~~$\frac{m}{x} = \frac{n}{6}$~~ $6m = xn = \frac{6m}{n} = 50\,cm^3$

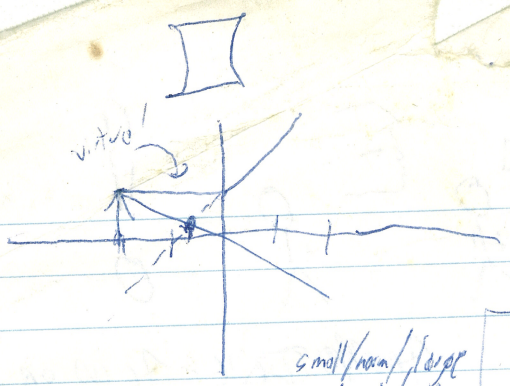
⑩ 12g, .96g

⑪ 20 g/cm^3, 7900 kg/m^3

⑫ 20 cm^3

⑬ ~~47~~ ~~45~~

⑭ 117.6



CONVERGING LENS

+ converging lens
− diverging lens

+ anticipate

do	di char
∞	vs
>2f	vs
2f	vs
2f > X > f	vs
f	vs
< f	vs

small/norm/large
virtual/real
erect/inverted

work

$S_o = 1_{cm}$

$d_o = 15cm$

$f = 10_{cm}$

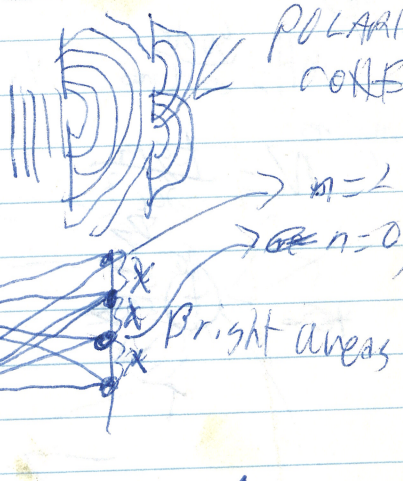
$\frac{1}{d_i} + \frac{1}{d_o} = \frac{1}{f}$

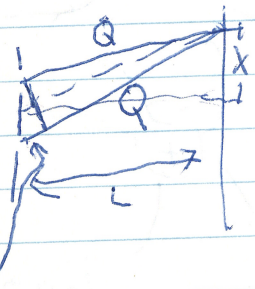
$d_i = 30_{cm}$ $\frac{1}{d_i} = \frac{1}{f} - \frac{1}{d_o}$

$s_i = d_i \cdot s_o = d_o - 2cm$

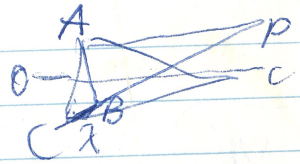
$s_o = 2cm$ $d_o = 4cm$ $f = 12cm$

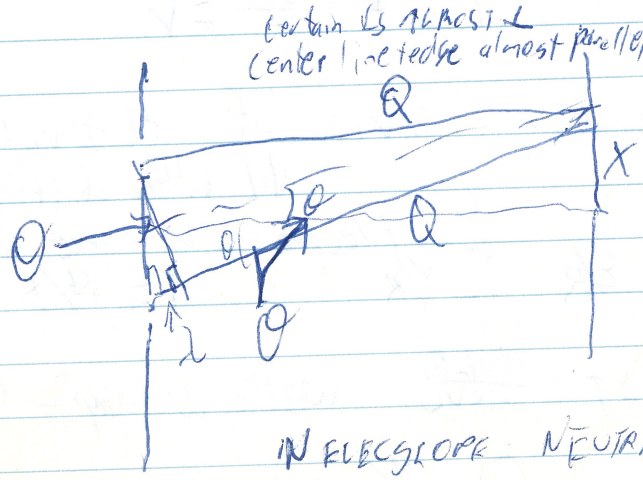
$d_i = -6$ $s_i = -3$





# of wavelengths

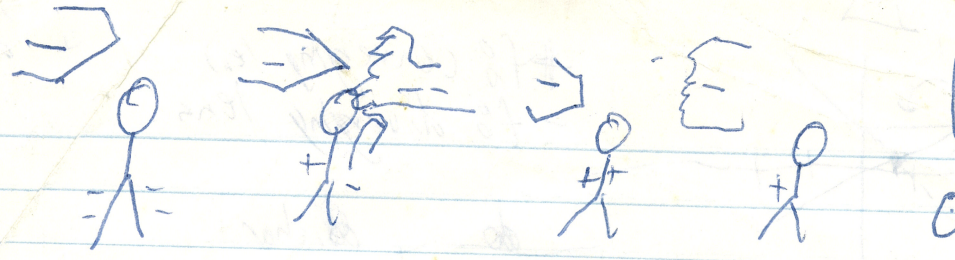




$\frac{X_n}{L} = \frac{\lambda n}{d}$

IN ELECTROPE NEUTRAL TAKES AWAY ELECTRONS, SEEMS C

4/1 through 3



OPPOSITE CHARGING BY INDUCTION

AMPHOTERIC - ACID OR BASE

$F = \frac{q_1 q_2}{R^2} \cdot K$ $\quad K = 9 \times 10^9 \frac{Nm^2}{coul^2}$

$q^1 \quad q^2$

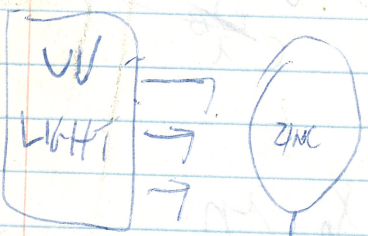
WATT = JOULE/SEC = volt amp

$g = 9.8 \frac{m}{s^2} = 9.8 \frac{N}{kg}$ $\quad J = NM$

watt = $\frac{joule}{sec}$ $\quad$ VOLT = $\frac{joule}{coulomb}$ $\quad V = \frac{W}{q}$ $\quad i = \frac{q}{t}$ current = charge/time $\quad$ AMPS = $\frac{coulomb}{sec}$

watt = volt amperes

$N = \frac{kgm}{sec^2}$



REMOVES CHARGE

ELECTROSCOPE

$V = \frac{W}{q}$ $\quad W = Vq$

$P = \frac{W}{t} = \frac{Vq}{t} = Vi$

$i = \frac{q}{t}$ i = amperes (current)

$W = J/sec = NM/sec = NM$

series of cells volts add

i.i battery of cells

$\mathcal{E}$ = Electro Motive Force = Volts $= W/q$

OHMS LAW: $i = \mathcal{E}/R$ $\quad i = V/R$ $\quad i = q/t$

RHO = RESISTIVITY

amp = $\frac{coul}{sec}$ $\quad$ VOLT = $\frac{JOULE}{coul}$ $\quad$ watt = voltamp = $\frac{coul}{sec} \frac{JOUL}{coul} = J/sec$

$R = \rho \frac{l}{A}$ — length; cross section area; RHO

$\Omega = V/a \quad \rho = \Omega m$